

FIGURE 1A
(PRIOR ART)

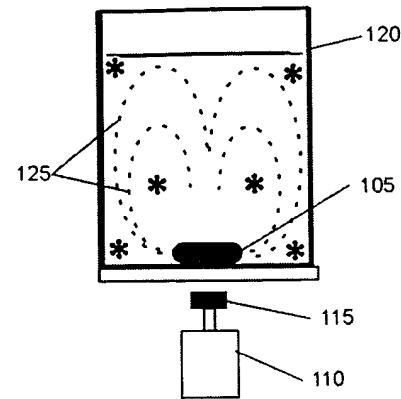


FIGURE 1B
(PRIOR ART)

* AREAS OF INCOMPLETE STIRRING

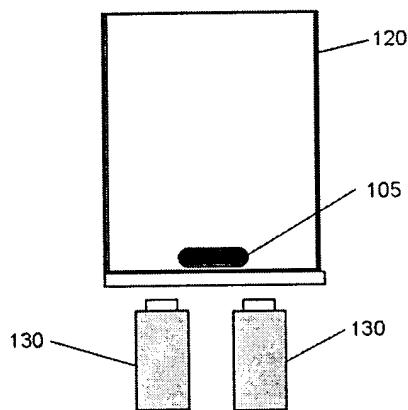


FIGURE 1C
(PRIOR ART)

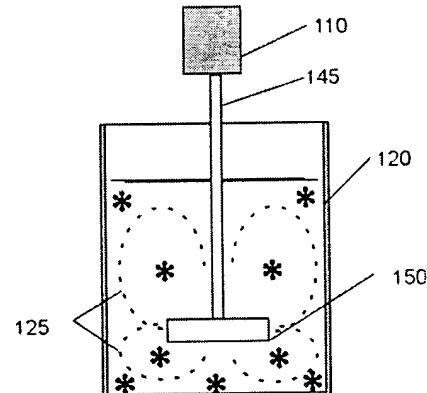


FIGURE 1D
(PRIOR ART)

* AREAS OF INCOMPLETE STIRRING

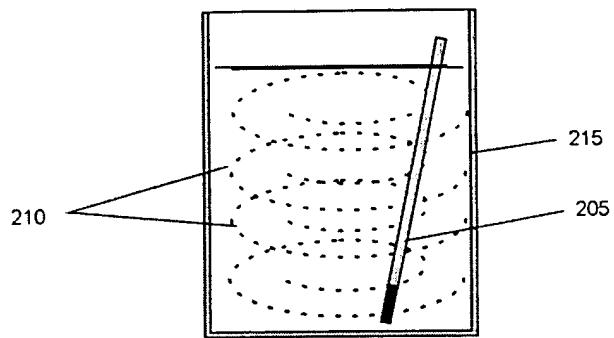


FIGURE 2A

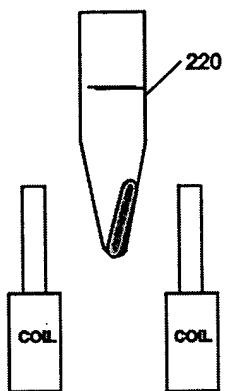


FIGURE 2B

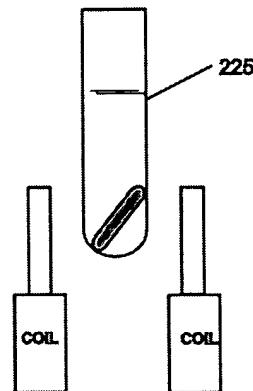


FIGURE 2C

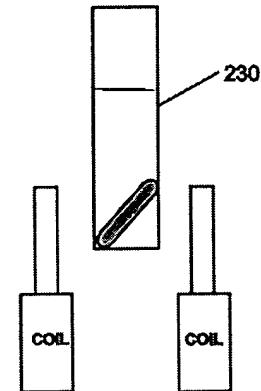


FIGURE 2D

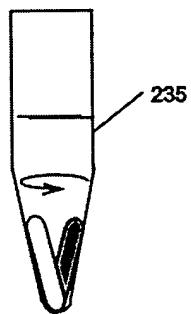


FIGURE 2E

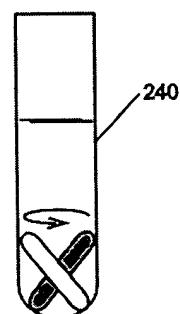


FIGURE 2F

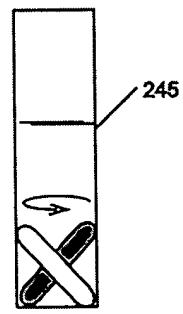


FIGURE 2G

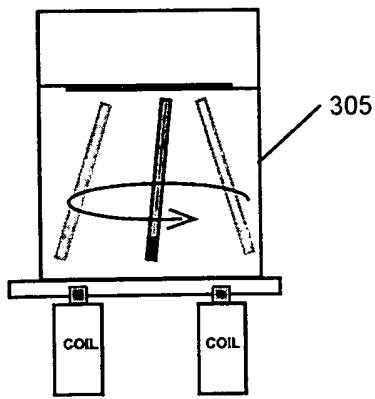


FIGURE 3A

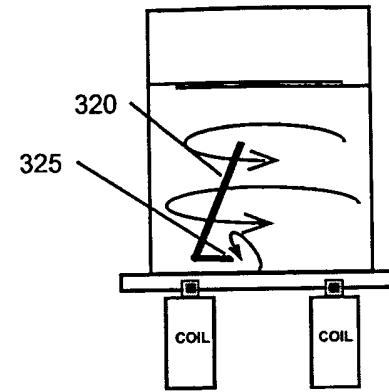


FIGURE 3C

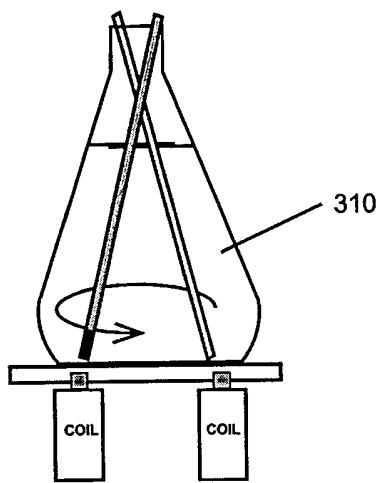


FIGURE 3B

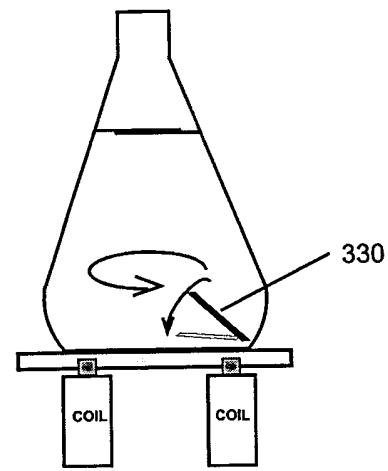


FIGURE 3D

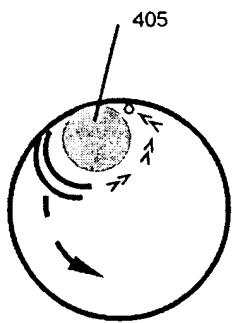


FIGURE 4A

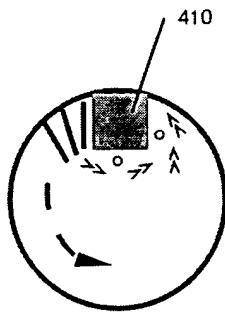


FIGURE 4B

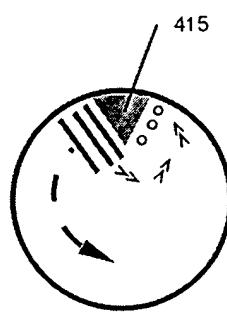


FIGURE 4C

SYMBOL KEY:

|| FRONTAL WAVE

○ NEGATIVE PRESSURE

>> LIQUID FLOW

↙ BAR ROTATION

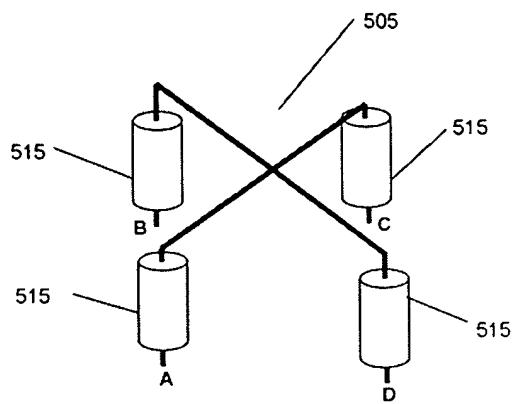


FIGURE 5A

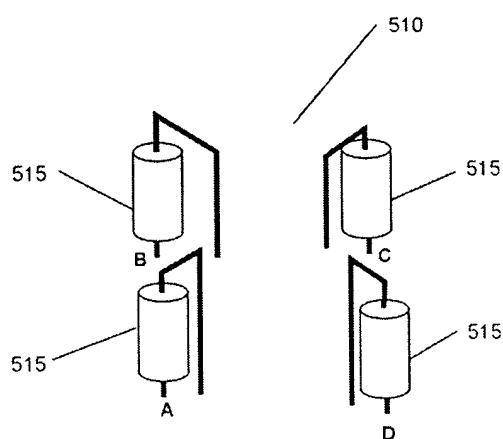


FIGURE 5B

In all configurations, coils A and C, B and D oppose each other.

Full Power, Single Step (centered magnet)

Rotation Angle	Coil A		Coil B		Coil C		Coil D	
0	+	-			-	+		
90			+	-			-	+
180	-	+			+	-		
270			-	+			+	-

FIGURE 6A

Full Power, Single Step (magnet along wall of vial)

Rotation Angle	Coil A		Coil B		Coil C		Coil D	
0	+	-						
90			+	-				
180					+	-		
270							+	-

FIGURE 6B

Full Power, Half Step (centered magnet)

Rotation Angle	Coil A		Coil B		Coil C		Coil D	
0	+	-			-	+		
45	+	-	+	-	-	+	-	+
90			+	-			-	+
135	-	+	+	-	+	-	-	+
180	-	+			+	-		
225	-	+	-	+	+	-	+	-
270			-	+			+	-
315	+	-	-	+	-	+	+	-

FIGURE 7A

Full Power, Half Step (magnet along wall of vial)

Rotation Angle	Coil A		Coil B		Coil C		Coil D	
0	+	-						
45	+	-	+	-				
90			+	-				
135			+	-	+	-		
180					+	-		
225					+	-	+	-
270							+	-
315	+	-					+	-

FIGURE 7B

Sinusoidal Drive (centered magnet)

Rotation Angle \emptyset	Coil A Sin \emptyset	Coil B Sin $(\emptyset - 90)$	Coil C Sin $(\emptyset - 180)$	Coil D Sin $(\emptyset - 270)$
0	0	Min	0	Max
45	.707	.707	-.707	.707
90	Max	0	Min	0
135	.707	.707	.707	-.707
180	0	Max	0	Min
215	-.707	.707	.707	.707
270	Min	0	Max	0
315	.707	-.707	.707	.707

Max = maximum positive drive level possible.

Min = maximum negative drive level possible.

FIGURE 8

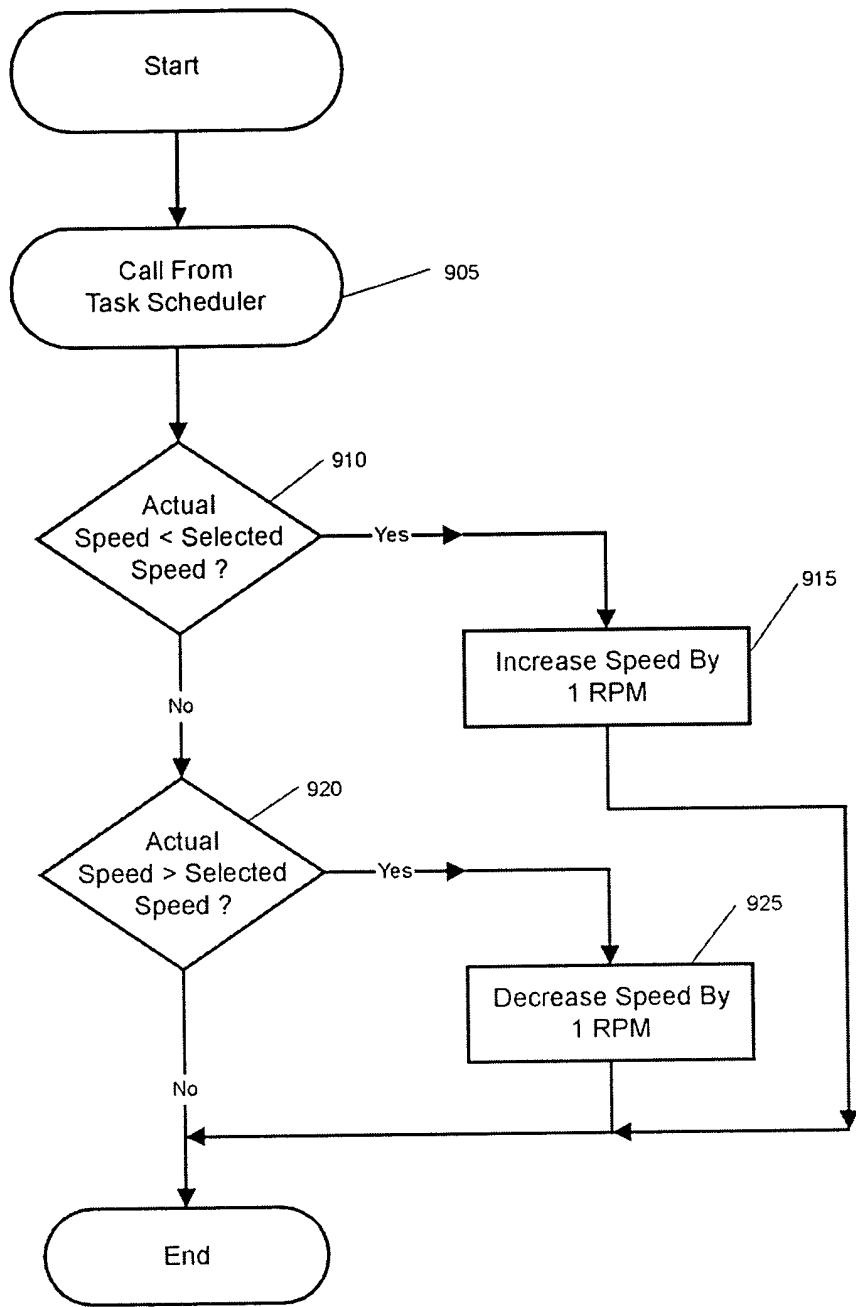


FIGURE 9

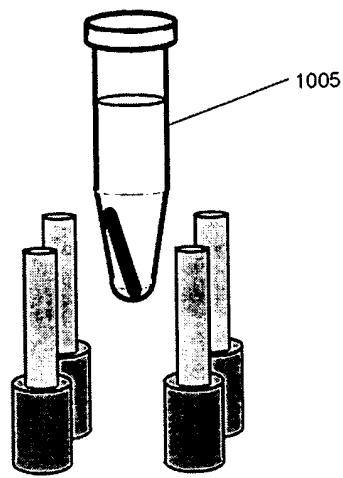


FIGURE 10A

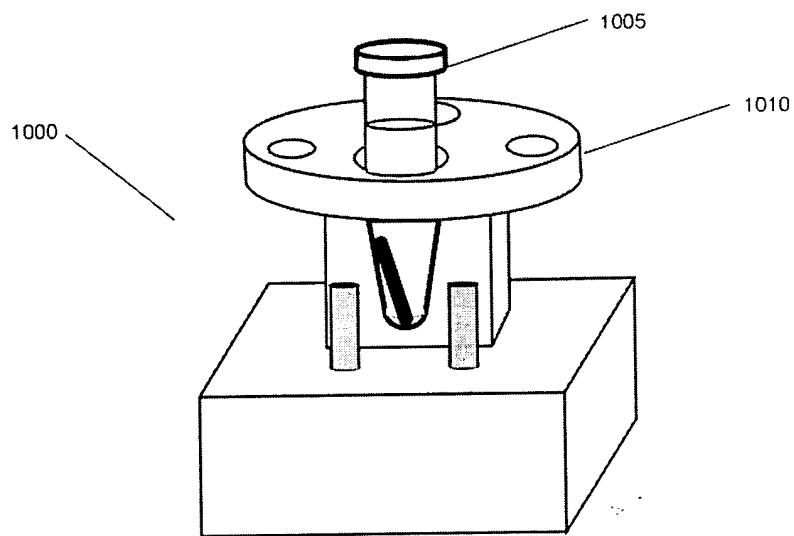


FIGURE 10B

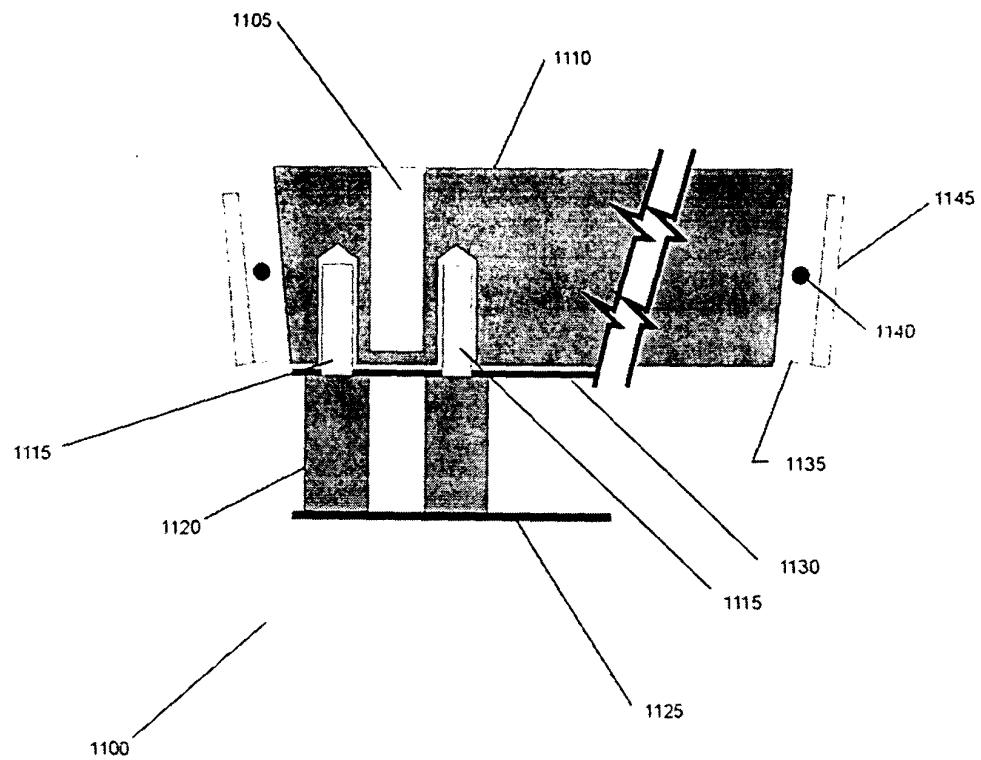


FIGURE 11A

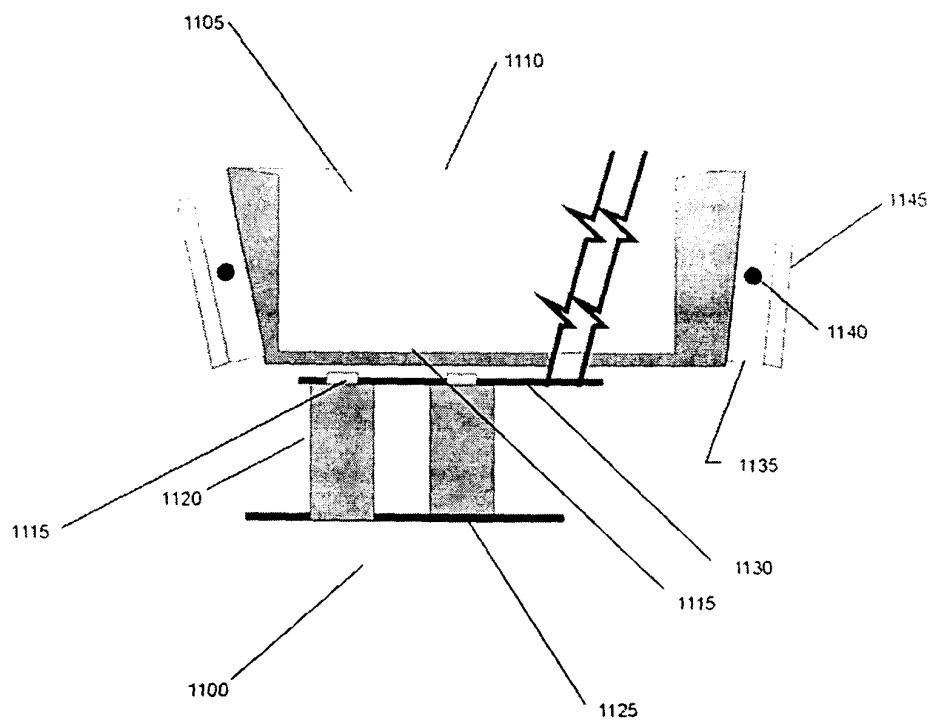


FIGURE 11B

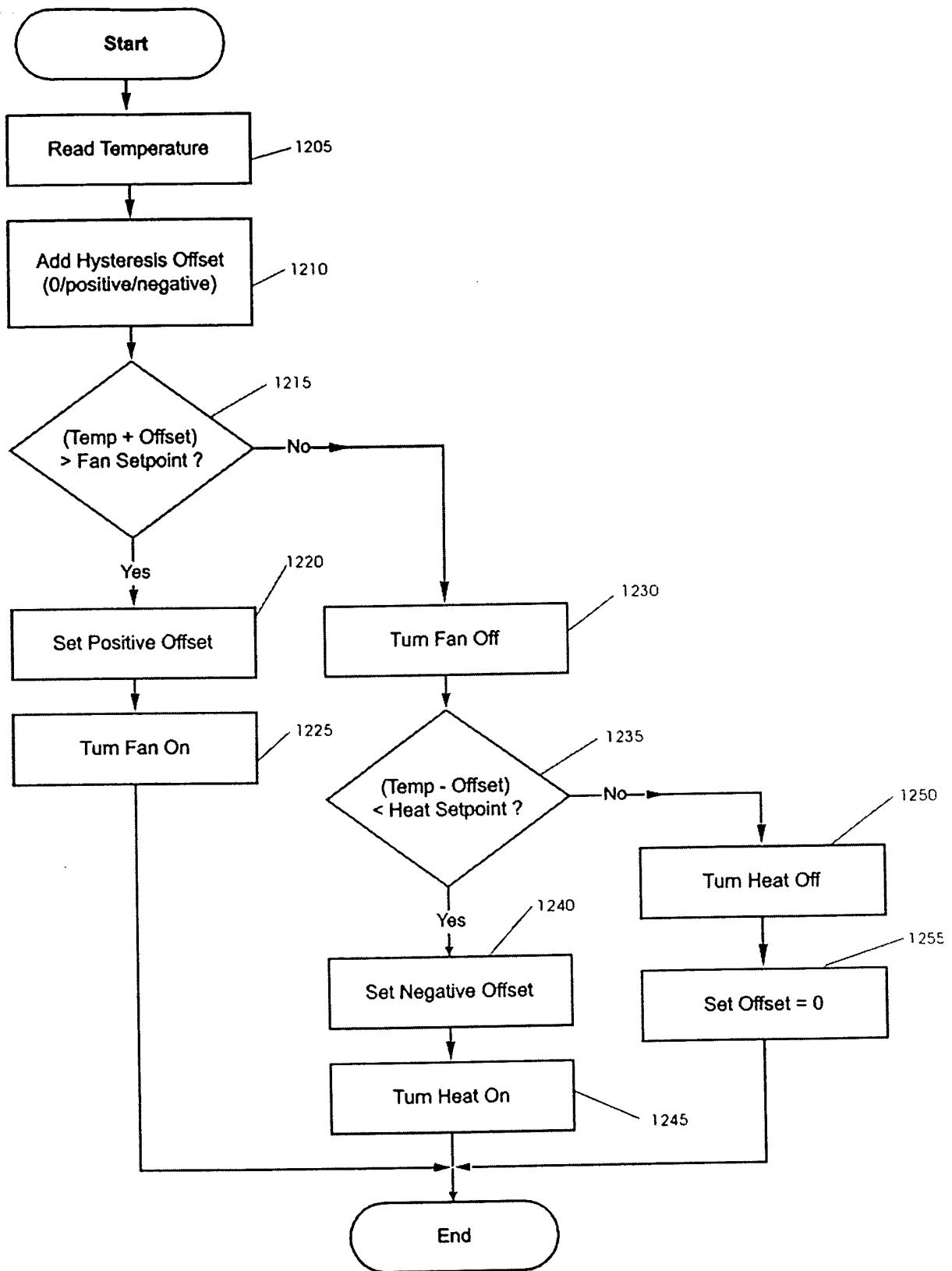
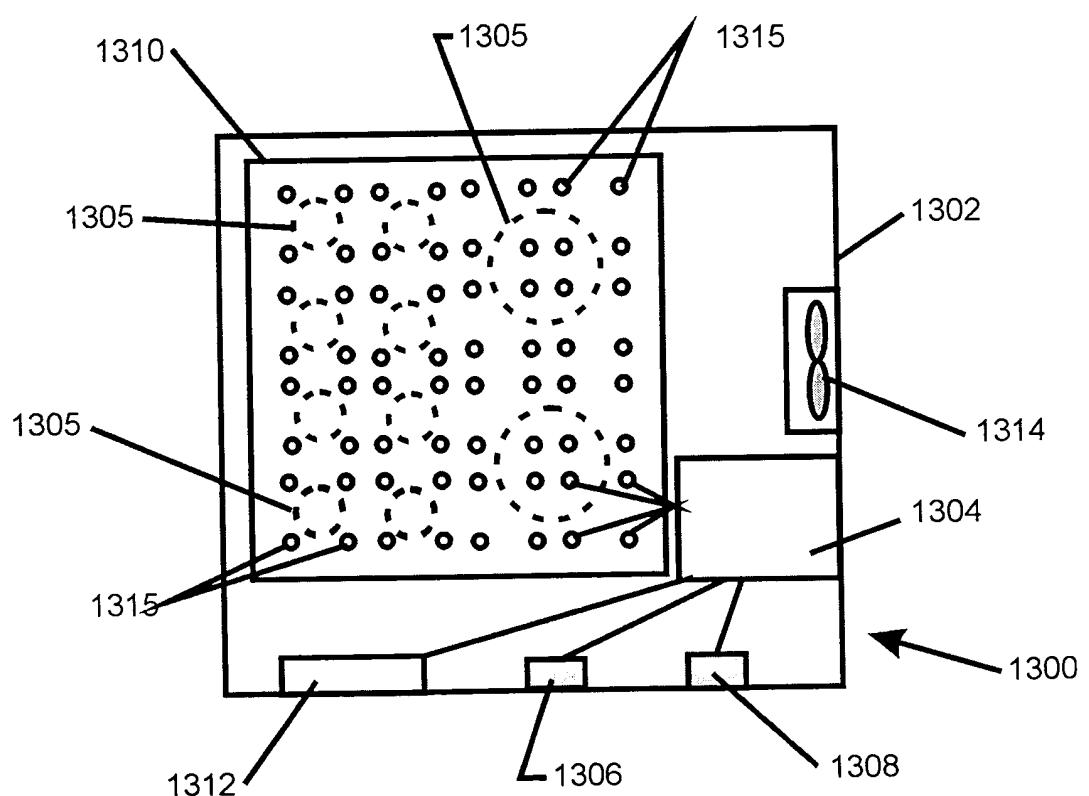
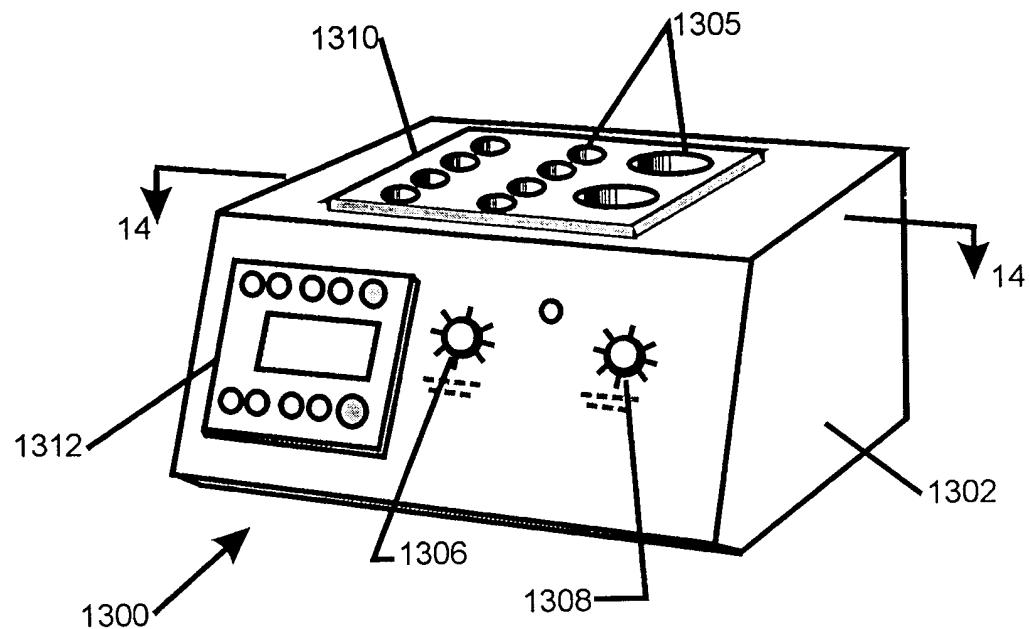


FIGURE 12



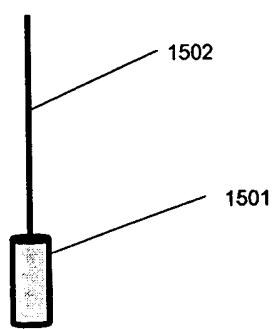


FIGURE 15A

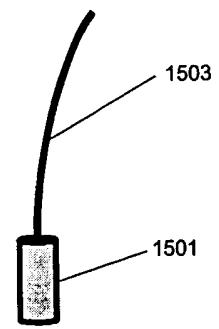


FIGURE 15B

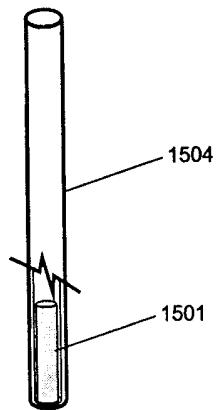


FIGURE 15C

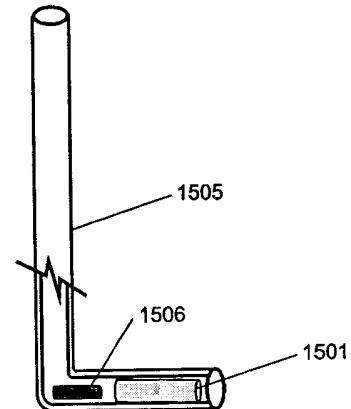


FIGURE 15D

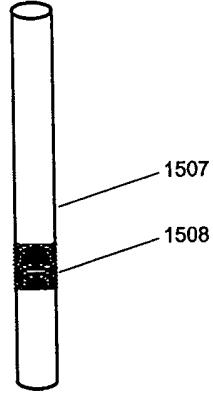


FIGURE 15E

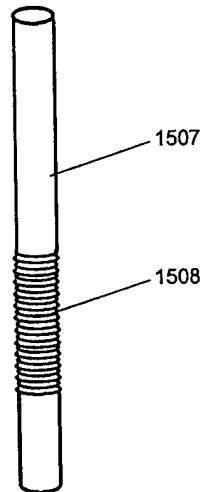


FIGURE 15F

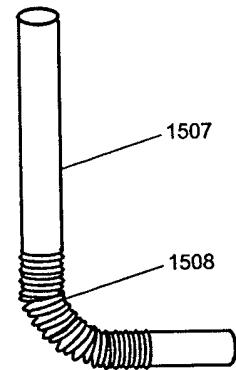


FIGURE 15G

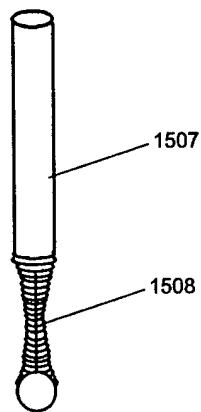


FIGURE 15H